Outcome of Colostomy in Infants for Anorectal Malformation -A Single Institution Experience; A Retrospective Analysis

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Abstract:
Aim: To determine the outcome of colostomy formation in neonatal period.
Material and Methods:- A retrospective analysis was done in our institution among the colostomy done babies with in 30 days of life for a period of 5 years. Fisher's exact test was used to find out the significance level and P value of <0.05 was considered as significant.
Results: Total colostomy done in 30 days of life or less were 118. Male babies were 90 and female 28. Mortality was 8(6.8%). Weight less than 2.5 kgs babies die more frequently(P=0.043). All the babies died were stayed more than 7 days in the hospital(P=0.01). There was no significance between age at surgery, sex and outcome.
Conclusion: Low birth weight babies die more frequently following colostomy formation in ARM.
Keywords: Anorectal Malformation(ARM); Colostomy; Mortality

I. Introduction

Colostomy formation in newborn period is the preferred primary treatment option for Ano-rectal malformation(ARM) by most of the paediatric surgeons. Morbidity and mortality related to colostomy also high. Here we estimate the incidence of immediate complications of colostomy formation, particularly mortality and other associated factors in our institution.

II. Materials and Methods

A retrospective analysis of colostomy done on ARM children from January 2014 to December 2018(5 Years) period in our paediatric surgery department of Madurai medical college and Government Rajaji Hospital. Babies operated at the age of 30 days and less were taken in to the study. Data regarding age, sex, weight, hospital stay in days, mortality and associated other anomalies were recorded. Low ARM cases underwent anoplasty were not included in the study. Data analysis was done after entering the data in excel sheet. Fisher's exact test was used to identify the level of significance. P value of <0.05 was considered as significant.

III. Results

Total number of colostomy done for ARM during 5 years was 142, among them 30 days and less old were 118. Among the ARM, colostomy required for high or intermediate anomalies was 107, Anovestibular Fistula was 4, Rectovestibular Fistula was 2, cloaca anomaly was 4 and one anal atresia.

Male babies were 90(76.3%) and female 28(23.7%)(M:F= 3.2:1). Total death noted was 8(6.8%) following colostomy. Among the male babies 84(93.3%) were alive and 6(6.7%) died. In the females 26(92.8%) were alive and 2(7.2) died(Figure.1). There was no significant relationship between operative outcome and sex of the babies.

Figure.1. Colostomy outcome and sex of the baby relationship

Outcome following colostomy and sex relationship
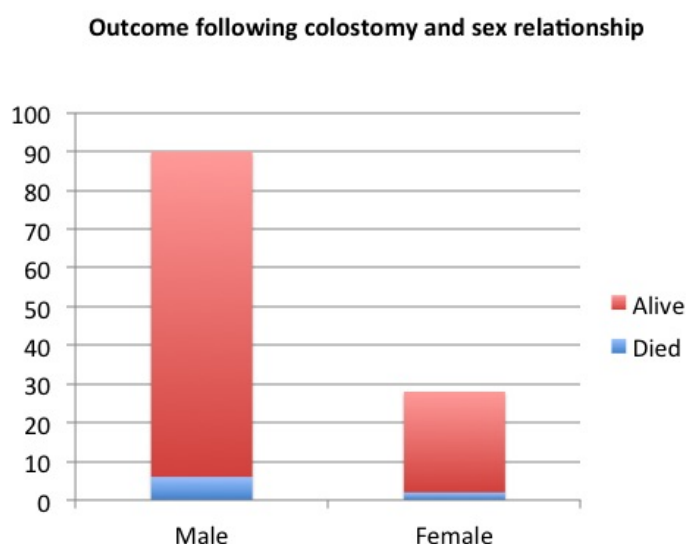
Weight of 2.5 Kgs and less were 34(28.8%), which includes 28 males and 6 females. Weight of 2.6 Kgs and more were 84(71.2%), which includes 62 males and 22 females(Figure.2). Less than 2.5kgs weight was common with male babies compared to females, but its not statistically significant.

Figure.2. Weight and Sex of the baby relationship

Weight and Sex Relationship
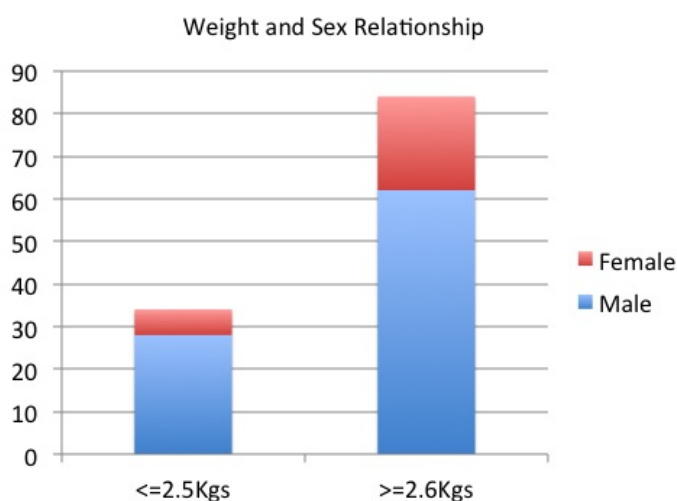
Mean weight of the babies was 2.66 Kgs(Range from 1.5 to 4 Kgs).Mean weight of the live male babies was 2.67Kgs and 2.38 Kgs for died ones. Female live babies mean weight was 2.76 Kgs and 1.8 Kgs for died.

Analyzing the weight and outcome following colostomy implies weight less than 2.5kg babies die more frequently than the babies with weight of 2.6kg or more(P=0.043)(Table.1).

Table.1. Weight of the baby and outcome relationship

Weight in Kgs/Outcome	Died	Alive	Fisher's Exact Test
<=2.5	5	29	P= 0.043
>=2.6	3	81	
Total	8	110	118

Among the babies which were all died have the hospital stay of more than seven days(P=0.01)(Table.2).

Table.2. Outcome of the surgery and number days hospital stay relationship

Outcome/ Hospital stay	Stay <= 7 days	Stay >7 days	Fisher's Exact Test
Died	0	8	P= 0.01
Alive	51	59	
Total	51	67	118

There was no statistically significant difference between hospital stay and sex.

Mean age of admission for colostomy was 2.14(Minimum 1 day , maximum 30 days). But there was no association between age of admission and outcome of the babies.

Table.3. Age and outcome relationship

Outcome/Age	1st and 2nd day	> 2 days	Fisher's Exact Test
Died	7	1	P value not significant
Alive	91	19	
Total	98	20	118

Colostomy complications noted were skin dehiscence in 10, intestinal obstruction in 5, prolapse in 4, necrosis of ostomy bowel in 2 and bowel retraction in 2.

IV. Discussion

Gender ratio observed in our study was 3.2:1(M:F), which was comparable to the study done by Mirza B et al. with the incidence of 3.4:1. Deaths noted in our study was 6.8%, which was high(15%) in their study[1]. No mortality was noted with a study done by Patwardhan et al. and mean age of colostomy formation was 2 days, which was similar in our study also. But this prospective study and Figueroa M et al. study documented the complications like prolapse, obstructions(adhesion, volvulus & intussusception), stenosis, Parastomal hernia skin dehiscence and necrotizing enterocolitis(NEC), which was also documented in our study other than NEC and intussusception[2,3].

Study done by Chowdhary SK et al. noticed the mortality of 16% but it was only 6.8% in our study. Low birth weight(LBW)(<2.5 kgs) associated with significantly high mortality in our study, was noted in their study also. Another study done by Chirdan LB et al. also proved the high mortality among the LBW babies, with the overall mortality rate of 20%. All these studies had local anesthesia as an alternative, when the babies were not fit. But all of our cases were done under general anesthesia or caudal anesthesia with intravenous sedation[4,5].

All the babies died were stayed more than 7 days, which implies all the babies died later may be due to sepsis and other complications mentioned earlies. None were died in immediate postoperative days.

In this study other congenital anomalies like Vertebral, cardiac anomalies, Tracheo-esophageal, Renal and Limb were not documented for analysis. So death related to other congenital anomalies could not be analyzed.

V. Conclusion

Positive operative outcome of neonatal colostomy was seen with weight more than 2.5 kgs and negatively with weight less than 2.5kgs. Sex or age of admission for colostomy did not affect the outcome of colostomy.

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